

AMENDMENTS TO THE CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

Listing of Claims:

1. (Currently Amended) An inductor, comprising:
a plurality of unit inductors, ~~each unit inductor having a vertical spiral structure,~~
~~wherein~~ a vertical cross-section of at least one unit inductor ~~selected from of the~~
plurality of unit inductors ~~is an inverted trapezoid~~ having a width that increases from a
bottom surface of the at least one unit inductor to a top surface of the at least one unit
inductor, the at least one unit inductor including a top metal layer extending across the width
at the top surface; and

means for connecting a unit inductor to an adjacent unit inductor in the plurality of
unit inductors in a direction perpendicular to the top metal layer.

2. (Currently Amended) The inductor as claimed in claim 1, wherein a vertical cross-section of all of the remaining plurality of unit inductors has ~~an inverted trapezoid a~~
width that increases from a bottom surface to a top surface of the unit inductor and a top
metal layer extending across the width at the top surface.

3. (Currently Amended) The inductor as claimed in claim 1, wherein a vertical cross-section of ~~[[the]]~~ remaining unit inductors has an inverted trapezoid, circular, triangular, rectangular, or elliptical structure.

4. (Original) The inductor as claimed in claim 2, wherein each unit inductor of the plurality of unit inductors has a same size.

5. (Withdrawn) The inductor as claimed in claim 2, wherein one unit inductor selected from the plurality of unit inductors has a size that is different from that of the rest.

6. (Currently Amended) The inductor as claimed in claim 1, wherein the at least one unit inductor ~~selected from the plurality of unit inductors~~ comprises:
a base metal layer at the bottom surface;

a multi-layer metal layer including two metal segments separated by a distance along the width, the multi-layer metal layer being between the base metal layer and the top metal layer; layers; and

conductive plugs ~~[[that]]~~ for vertically ~~connect the multi-layer~~ connecting adjacent metal layers, ~~wherein layers of the multi-layer metal layers formed between top and bottom layers of the multi-layer metal layers include two metal layers, metal layers of the multi-layer metal layers formed under the top layer of the multi-layer metal layers do not overlap except at portions thereof connected via the conductive plugs.~~

7. (Currently Amended) The inductor as claimed in claim ~~[[6]]~~ 19, wherein the metal portions ~~layers of the at least two multi-layer metal layers formed under the top layer of the multi-layer metal layers~~ are symmetrical.

8. (Currently Amended) The inductor as claimed in claim ~~[[6]]~~ 15, wherein the top metal layer of the unit inductor ~~metal layers~~ is connected to ~~[[a]]~~ the multi-layer metal layer ~~under a top layer of [[a]] the adjacent unit inductor adjacent to the selected unit inductor.~~

9. (Currently Amended) The inductor as claimed in claim ~~[[6]]~~ 19, wherein metal portions ~~layers formed on at least one layer of the at least two multi-layer metal layers formed between the top layer of the multi-layer metal layers and the bottom layer of the multi-layer metal layers~~ have a same length, thickness, and width.

10. (Withdrawn) The inductor as claimed in claim 6, wherein at least one of a length, thickness, and width of metal layers formed on at least one layer of the multi-layer metal layers formed between the top layer of the multi-layer metal layers and the bottom layer of the multi-layer metal layers is different from a respective length, thickness, and width of the others.

11. (Currently Amended) The inductor as claimed in claim 7, wherein the metal portions ~~layers formed between the top layer of the at least two multi-layer metal layers and the bottom layer of the multi-layer metal layers~~ have a same length, thickness, and width.

12. (Withdrawn) The inductor as claimed in claim 7, wherein at least one of a length, thickness, and width of metal layers formed on different layers between the top layer of the multi-layer metal layers and the bottom layer of the multi-layer metal layers is different from a respective length, thickness, and width of the others.

13. (Original) The inductor as claimed in claim 6, wherein the conductive plugs have the same length.

14. (Original) The inductor as claimed in claim 6, wherein conductive plugs on different layers have different lengths.

15. (Currently Amended) The inductor as claimed in claim 2, wherein ~~the at least one~~ each unit inductor ~~selected from of~~ the plurality of unit inductors comprises:

a base metal layer at the bottom surface;

a multi-layer metal layer including two metal segments separated by a distance along the width, the multi-layer metal layer being between the base metal layer and the top metal layer; and

~~conductive plugs [[that]] for vertically connect the multi-layer~~ connecting adjacent metal layers, ~~wherein layers of the multi-layer metal layers formed between top and bottom layers of the multi-layer metal layers include two metal layers, metal layers of the multi-layer metal layers formed under the top layer of the multi-layer metal layers do not overlap except at portions thereof connected via the conductive plugs.~~

16. (Currently Amended) The inductor as claimed in claim 3, ~~the at least one~~ each unit inductor ~~selected from of~~ the plurality of unit inductors comprises:

a base metal layer at the bottom surface;

a multi-layer metal layer including two metal segments separated by a distance along the width, the multi-layer metal layer being between the base metal layer and the top metal layer; and

~~conductive plugs [[that]] for vertically connect the multi-layer~~ connecting adjacent metal layers, ~~wherein layers of the multi-layer metal layers formed between top and bottom layers of the multi-layer metal layers include two metal layers, metal layers of the multi-layer metal layers formed under the top layer of the multi-layer metal layers do not overlap except at portions thereof connected via the conductive plugs.~~

17. (Currently Amended) The inductor as claimed in claim 4, ~~the at least one~~ each unit inductor ~~selected from~~ of the plurality of unit inductors comprises:

a base metal layer at the bottom surface;

a multi-layer metal layer including two metal segments separated by a distance along the width, the multi-layer metal layer being between the base metal layer and the top metal layer; ~~layers;~~ and

~~conductive plugs [[that]] for vertically connect the multi-layer~~ connecting adjacent metal layers, ~~wherein layers of the multi-layer metal layers formed between top and bottom layers of the multi-layer metal layers include two metal layers, metal layers of the multi-layer metal layers formed under the top layer of the multi-layer metal layers do not overlap except at portions thereof connected via the conductive plugs.~~

18. (Withdrawn) The inductor as claimed in claim 5, wherein the at least one unit inductor selected from the plurality of unit inductors comprises:

multi-layer metal layers; and

conductive plugs that vertically connect the multi-layer metal layers, wherein layers of the multi-layer metal layers formed between top and bottom layers of the multi-layer metal layers include two metal layers, and metal layers of the multi-layer metal layers formed under the top layer of the multi-layer metal layers do not overlap except at portions thereof connected via the conductive plugs.

19. (New) The inductor as claimed in claim 6, wherein the at least one unit inductor further comprises at least two multi-layer metal layers between the base metal layer and the top metal layer, the metal segments of the at least two multi-layer metal layers only overlapping at portions thereof connected via the conductive plugs.

20. (New) The inductor as claimed in claim 6, wherein one metal segment of the multi-layer metal layer extends along a length beyond the bottom metal layer.

21. (New) The inductor as claimed in claim 15, wherein each unit inductor further comprises at least two multi-layer metal layers between the base metal layer and the top metal layer, the metal segments of the at least two multi-layer metal layers only overlapping at portions thereof connected via the conductive plugs.

22. (New) The inductor as claimed in claim 15, wherein one metal segment of the multi-layer metal layer extends along a length beyond the bottom metal layer.

23. (New) The inductor as claimed in claim 1, wherein the vertical cross-section of the at least one unit inductor of the plurality of unit inductors forms an inverted trapezoid.